HBAnyware®
Command Line

Version 4.0

User Manual

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Critical Connectivity Solutions™

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Installing the HBAnyware CLI

Introduction

The HBAnyware Command Line Interface (CLI) is a comprehensive management utility for Emulex host bus adapters (HBAs) that provides support for commonly used commands without requiring installation of the HBAnyware Graphical User Interface (GUI). The HBAnyware CLI is a separate application with core driver kits that do not include the HBAnyware GUI. The HBAnyware CLI console application name is hbacmd and can be installed on Windows, Linux and VMware. A single operation is performed by entering 'hbacmd' at the command line. For syntax information and details on using the HBAnyware CLI, see "Using the HBAnyware Utility Command-Line Interface" on page 5.

Platforms that are supported with the HBAnyware CLI are detailed in Table 1.

Table 1: HBAnyware Command Line Interface Supported Platforms

Driver	Architecture	Operating System
Storport Miniport Driver	Intel x86, IA-64, EM64T and AMD64	Windows Server 2008 Windows Server 2003
LPFC 7.4.x Driver	Intel x86, EM64T and AMD64	VMware ESX Server 3.5
Open Source Driver for RHEL4 and SUSE Linux Enterprise Server (SLES) 9	Intel x86, EM64T, AMD64, PPC64 and IA 64	RHEL 4 Updates 3, 4 and 5 and later SUSE Linux Enterprise Server 9 SP 2 or later
Open Source Driver for RHEL 5 and SLES 10	Intel x86, EM64T, AMD64, PPC64 and IA 64	RHEL 5, RHEL 5.1 and RHEL 5.2 SUSE Linux Enterprise Server

Windows

To install the HBAnyware CLI, run an installation .exe file for a core Windows driver kit that does not include the HBAnyware GUI:

- storportminiportcorekit_[version].exe

  [version] represents the complete version. For example, storportminiportcorekit_1-30a9-1d

Linux

Before installing the core kit, the 8.0 or 8.2 driver must be installed. For 8.0 systems (RHEL4, SLES9), the lpfcdfc IOCTL module must also be installed. To install the HBAnyware CLI on a new system, install the specific driver RPM for your Linux version.

Enter the following command all in one line.

```
# rpm -i elxlinuxcorekit-[version].rpm
```

VMware

To install the HBAnyware CLI on a new system, install the specific RPM for the driver for your VMware version.

Prerequisites

- The lpfc driver must be loaded.

Procedures

To install the HBAnyware CLI:

1. Log in as ‘root’.
2. Copy the elxvmwarecorekit-<kit version>.rpm file to a directory on the install machine.
3. CD to the directory to which you copied the rpm file.
4. Install the rpm. Type:

   ```
   rpm -U elxvmwarecorekit-<kit version>.rpm
   ```

   The rpm contents are installed in /usr/sbin/hbanyware. The hbacmd utility is also located in this directory.

Installing the HBAnyware CLI on a Linux System with an Existing HBAnyware CLI Kit Installed

Follow these steps to install the HBAnyware CLI on a Linux system with an existing HBAnyware CLI kit installed:

1. Uninstall the Linux core kit. Type:

   ```
   rpm -e elxlinuxcorekit-[version]
   ```

   Note: If the uninstallation script does not work, you have an older HBAnyware kit. In this case, follow the procedure for **Uninstalling Older HBAnyware Kits on VMware** in this topic.

2. Install the specific RPM for your driver for Linux version. Enter this command (all in one line).

   ```
   # rpm -i elxlinuxcorekit-[version].rpm
   ```

Uninstalling Older HBAnyware Kits on Linux

1. Locate and download the full application tar file for the appropriate Linux version.
2. Untar the tar file and run the installation script to install the application.

   If the HBAnyware Security Configurator is installed, it must be uninstalled before uninstalling the HBAnyware utility. You must run the uninstall script that shipped with the version of HBAnyware Security Configurator that you want to remove. Proceed to step 3. If the Security Configurator is not installed, proceed to step 4.
3. If the HBAnyware Security Configurator is installed, follow these steps:
   a. Log on as ‘root’.
   b. Change (use cd command) to the directory to which you copied the tar file during installation.
   c. Run the uninstall script with the ssc parameter specified. Type:

      ```
      ./uninstall ssc
      ```

4. Uninstall HBAnyware, lputil and the Application Helper Module:
    a. Log on as ‘root’.
    b. Change (use cd command) to the directory to which you copied expanded the tar file during installation.
    c. Uninstall any previously installed versions. Type:
    ```
    ./uninstall
    ```
    d. Install the specific RPM for your driver for Linux version. Enter the following command all in one line.
    ```
    # rpm -i elxlinuxcorekit-[version].rpm
    ```

Installing the HBAnyware CLI on a VMware System with an Existing HBAnyware CLI Kit Installed

Follow these steps to install the HBAnyware CLI on a VMware system with an existing HBAnyware CLI kit Installed:

1. Install the RPM by entering the following command all on one line:
    ```
    # rpm -U elxvmwarecorekit-[version].rpm
    ```

Uninstalling Older HBAnyware Kits on VMware

1. Log in as ‘root’.
2. Type: `rpm -qa | grep elx` and locate the following rpm file:
    ```
    elxvmwarecorekit-<kit version>
    ```
    The rpm contents are installed in /usr/sbin/hbanyware. The hbacmd utility is also located in this directory.
3. Type:
    ```
    rpm -e elxvmwarecorekit-<kit version>
    ```

Upgrading from CLI to Full-Featured HBAnyware

Windows

To upgrade from the HBAnyware CLI to the full-featured HBAnyware utility:

1. From the desktop, run the storportminiportkit_[version].exe file that contain the full application kit.

    [version] represents the complete version. For example, storportminiportkit_1-30a9-1d.

    Running this executable file removes the HBAnyware CLI and installs a full-featured version of the HBAnyware utility that includes the CLI and the GUI.

Linux

To upgrade from the HBAnyware CLI to the full-featured HBAnyware utility:

1. Uninstall the core kit, using rpm -e elxlinuxcorekit-[version]
2. Install the HBAnyware kit, using the install script within the tar file.

VMware

The full-featured HBAnyware kit is not supported on VMware ESX Server.

Using the HBAnyware Utility Command-Line Interface

The Command Line Interface (CLI) Client component of the HBAnyware utility provides access to the capabilities of the Remote Management library from a console command prompt. This component is intended for use in scripted operations from within shell scripts or batch files. The CLI Client is a console application named hbacmd. Each time you run this application from the command line, a single operation is performed.

The first parameter of this command is the requested operation. When the specified operation is completed, the command prompt is displayed. Most operations retrieve information about an entity on the SAN and display that information on the console.

Most of the CLI Client commands require one or more additional parameters that specify the nature of the command. The World Wide Port Name (WWPN) is an example of a widely used parameter required by many hbacmd commands.

For example, run the following command from the directory in which HBAnyware is installed to display the port attributes for the HBA with the specified WWPN:

```
hbacmd portattrib 10:00:00:00:c9:20:20:20
```

hbacmd can be run in TCP/IP mode by making the first argument h=<host>. For example:

```
hbacmd h=cp-hp5670 listhbas
hbacmd h=138.239.91.121 listhbas
```

Note: For the VMware ESX Server, the firewall on the ESX Server must be opened to manage systems remotely. To enable TCP port #23333, run the following commands:

```
esxcfg-firewall --openPort 23333,tcp,in,hbanyware
esxcfg-firewall --openPort 23333,tcp,out,hbanyware
```

To verify that the correct port is open, run the following command:

```
esxcfg-firewall -q
```

The TCP port number can be changed. If it is not changed, the default is 23333 .

Refer to the VMware Server Configuration Guide for more details on how to configure the ESX firewall.

Using the CLI Client

Syntax Rules

The syntax rules for hbacmd are as follows:

- All CLI Client commands and their arguments are not case sensitive.
- The requested operation must contain at least three characters, or as many as needed to distinguish it from any other operation.
- Whenever a WWPN is specified, individual fields are separated by colons (:) or spaces ( ). When using space separators, the entire WWPN must be enclosed in quotes (").

The CLI Client Command Reference

CLI Client commands are supported for Windows, Linux and VMware ESX Server. Only CLI Client commands that are dynamic are supported for VMware ESX Server.

Note: The PersistentBinding, SetPersistentBinding, RemovePersistentBinding, RemoveAllPersistentBinding, BindingCapabilities, BindingSupport and SetBindingSupport commands are not supported for Linux.

Note: The BindingCapabilities, BindingSupport, GetLunList, PersistentBinding, RescanLuns, RemoveAllPersistentBinding, RemovePersistentBinding, SetBindingSupport, SetLunMask and SetPersistentBindingcommands exist in the Emulex driver for ESX Server 3.5.0, but are not supported.

Note: The GetLunMaskbyHBA and GetLunMaskbyTarget commands do not exist for ESX Server 3.5.0.

Read-Only Mode

The CLI (hbacmd) does not allow execution of "sensitive" commands when HBAnyware is configured for read-only mode. An error message will be displayed if such a command is attempted: Error: Read-only management mode is currently set on this host. The requested command is not permitted in this mode.

Help Commands

Help

Supported by: Windows, Linux and VMware ESX Server

Syntax: HbaCmd Help

Description: Shows a list of all help commands for the HBAnyware CLI Client application.

Parameters: None

Help Boot

Supported by: Windows, Linux and VMware ESX Server

Syntax: HbaCmd Help Boot

Description: Shows a list of all help commands for the boot commands.

Parameters: None

Help BootParams

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd Help BootParams <Parameter Name>

Description: Shows a summary of parameter settings for the adapter and the boot device. Several parameters have detailed help available.

Parameters:

Parameter Name (optional) - Specify one of the following boot parameters: AutoScan, BootTargetScan, DevicePathSelection, LinkSpeed, PlogiRetryTimer, or BootParams Topology.

Help GetBootParams

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd Help GetBootParams

Description: Shows help for the GetBootParams command.

Parameters:

WWPN - World Wide Port Name of Object adapter.

Type - None

Help SetBootParams

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd Help SetBootParams

Description: Shows help for the SetBootParams command.

Parameters: None

Attributes Commands

HBAAttributes

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd HBAAttributes <WWPN>

Description: Shows a list of all HBA attributes.

Parameters:

WWPN - World Wide Port Name of the HBA whose attributes you want to view.

PortAttributes

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd PortAttributes <WWPN>

Description: Shows a list of all port attributes for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose port attributes you want to view.

PortStatistics

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd PortStatistics <WWPN>

Description: Shows all port statistics for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose port statistics you want to view.

ServerAttributes

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd ServerAttributes <WWPN>

Description: Shows a list of server attributes for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose server attributes you want to view.

Authentication Commands

DeleteAuthConfig

Supported by: Windows and Linux

Syntax: hbacmd DeleteAuthConfig <WWPN1> <WWPN2> <PasswordType> <Password>

Description: Deletes the authentication configuration on the adapter.

Parameters:

WWPN1 - World Wide Port Name of the adapter whose authentication configuration you want to delete.

WWPN2 - Must be ff:ff:ff:ff:ff:ff:ff:ff

PasswordType - 1 = ASCII, 2 = Hex (binary), 3 = Password not yet defined

Password - Current password value.

GetAuthConfig

Supported by: Windows and Linux

Syntax: hbacmd GetAuthConfig <WWPN1> <WWPN2>

Description: Retrieves the authentication configuration for the adapter.

Parameters:

WWPN1 - World Wide Port Name of the adapter whose configuration data you want to retrieve.

WWPN2 - Must be ff:ff:ff:ff:ff:ff:ff:ff

InitiateAuth

Supported by: Windows and Linux

Syntax: hbacmd InitiateAuth <WWPN1> <WWPN2>

Description: Initiates the authentication configuration on the adapter.

Parameters:

WWPN1 - World Wide Port Name of the adapter whose authentication configuration you want to initiate.

WWPN2 - Must be ff:ff:ff:ff:ff:ff:ff:ff

SetAuthConfig

Supported by: Windows and Linux

Syntax: hbacmd SetAuthConfig <WWPN1> <WWPN2> <PasswordType> <Password> <Parameter> <Value>

Description: Sets the authentication configuration for the adapter.

Parameters:

WWPN1 - World Wide Port Name of the adapter whose authentication configuration you want to set.

WWPN2 - Must be ff:ff:ff:ff:ff:ff:ff:ff

PasswordType - 1 = ASCII, 2 = Hex (binary), 3 = Password not yet defined

Password - Current password value

Parameter - Parameters include Mode, Timeout, Bi-directional, Hash-priority, DH-priority, Re-authentication, Re-authentication-interval

Value - Parameter-specific value: Mode = <disabled, enabled, passive>, Timeout = time in seconds, Bi-directional = <disabled, enabled>, Hash-priority = <md5, sha1> (md5 = first md5, then sha1; sha1 = first sha1, then md5), DH-priority = <1,2,3,4,5>, any combination up to 5 digits, Re-authentication = <disabled, enabled>, Re-authentication-interval = < 0, 10 - 3600>

SetPassword

Supported by: Windows and Linux

Syntax: hbacmd SetPassword <WWPN1> <WWPN2> <Flag> <Cpt> <Cpw> <Npt> <Npw>

Description: Sets the password for the adapter.

Parameters:

WWPN1 - World Wide Port Name of the adapter for which you want to set a password.

WWPN2 - Must be ff:ff:ff:ff:ff:ff:ff:ff

Flag - 1 = Local (password used by adapter when adapter authenticates to the switch), 2 = Remote (password used by adapter when switch authenticates to the adapter)

Cpt - Current password type is 1 = ASCII or 2 = Hex (binary), 3 = Password not yet defined

Cpw - Current password value.

Npt - New password type is 1 = ASCII or 2 = Hex (binary)

Npw - New password value.

Boot Commands

<…> = Required, […] = Optional

EnableBootCode

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd EnableBootCode <WWPN> <Flag>

Description: Enables or disables the boot code on the adapter. If the boot code is disabled, the adapter will not boot from SAN, regardless of the value for the EnableBootFromSan boot param. If it is enabled, the adapter will boot from the SAN if the EnableBootFromSan parameter is also enabled.

Parameters:

WWPN - World Wide Port Name of Object adapters.

Flag - E = Enable the boot code, D = Disable the boot code

GetBootParams

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd GetBootParams <WWPN> <Type>

Description: Shows the boot parameters. If any arguments are missing or invalid, a suitable error is reported. If all arguments are ok, the appropriate RM_GetBootParamsXX call is made, and the data is displayed in tabular form.

Parameters:

WWPN - World Wide Port Name of Object adapter.

Type - X86, EFI, OB

SetBootParam

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbaCmd SetBootParam <WWPN> <Type> <Param> <Value1> [BootDev <Value2>]

Description: Performs a high-level read-modify-write operation.

- For Adapter Params, the BootDev keyword and value must be omitted; otherwise, an error is reported.
- For Boot Device Params (OpenBoot) the BootDev keyword and value must be omitted; otherwise, an error is reported.
- For Boot Device Params (X86 and EFI) the BootDev keyword and value are required.

Parameters:

WWPN - World Wide Port Name of Object adapter.

Type - X86, EFI, OB

Param - Parameter Name

Value1 - Parameter Value

Value2 - Boot Device Entry Number: { 0 - 7 }

CEE Commands

Note: CEE commands are for CEE management of LP21000 and LP21002 HBAs only.

CEEDownload

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd CEEDownload <WWPN> <Filename>

Description: Updates the CEE firmware on the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter.

Filename - Name of the file to download.

GetCEEParams

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd GetCEEParams <WWPN>

Description: Shows the current CEE parameters.

Parameters:

WWPN - World Wide Port Name of the adapter.

SetCEEParam

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd SetCEEParam <WWPN> <Param> <Value>

Description: SetCEEParam configures one of the CEE parameters.

Parameters:

Pausetype - 1 = Standard, 2 = Per Pause Priority

Pfcpriority - 8-bits, each bit representing a pause priority 0 - 7 (e.g. 170 = priorities 7, 5, 3, 1)

Fcoepriority - 0 - 7

Uifporttype - 1 = Access, 2 = Trunk

Diagnostic Commands

EchoTest

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd EchoTest <WWPN Source> <WWPN Destination> <Count> <StopOnError> <Pattern>

Description: Runs the echo test on adapters.

Note: Support for remote HBA is TCP/IP access only. The EchoTest command fails if the target WWPN does not support the ECHO ELS command.

Parameters:

Source WWPN - World Wide Port Name of the originating adapter.

Destination WWPN - World Wide Port Name of the destination (echoing) adapter.

Count - Number of times to run the test. 0 = run test infinitely

StopOnError - Should the test be halted on Error? 0 = No halt, 1 = Halt

Pattern - Hexadecimal data pattern to transmit (up to 8 characters)

GetBeacon

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd GetBeacon <WWPN>

Description: Shows the current beacon status for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose current beacon you want to view.

LoadList

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd LoadList <WWPN>

Description: Shows the flash load list data for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose flash load list data you want to view.

Loopback

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd loopback <WWPN> <Type> <Count> <StopOnError> <Pattern>

Description: Runs the loop test on the adapter specified by the WWPN.

Note: Only external loopback tests must be run with TCP/IP access.

Note: Internal and External Loopback tests are not available for LP21000 and LP21002 adapters.

Parameters:

WWPN - World Wide Port Name of the adapter on which you want to run loopback.

Type - 0 = PCI LoopBack Test, 1 = Internal LoopBack Test, 2 = External LoopBack Test

Count - Number of times to run the test (0 = run test infinitely, Range = 1...99,999)

StopOnError - Should the test be halted on Error? 0 = No halt, 1 = Halt

Pattern - Hexadecimal data pattern to transmit (up to 8 characters).

LoopMap

Supported by: Windows and Linux

Syntax: hbacmd LoopMap <WWPN>

Description: Shows the arbitrated loop map data for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose arbitrated loop map data you want to view.

PCIData

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd PCIData <WWPN>

Description: Shows PCI configuration data for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose configuration data you want to view.

HBACMD has a command that displays wakeup parameter information, much the same way that HBAnyware displays it in its own control field.

Wakeup Parameters:

Initial Load: 0x02B81991 0x00555637

Flags: 0x00000000

Boot BIOS: 0x03B11713 0x00101303

SLI-1: 0x06B21991 0x00103411

SLI-2: 0x07B21991 0x00103411

Has Expansion Rom: 1

SLI-3: 0x00000000 0x00000000

SLI-4: 0x00000000 0x00000000

Expansion Rom: 0x03B11713 0x00101303

The changes suggested for HBAnyware's GUI also apply to this command's output.

PostTest

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd PostTest <WWPN>

Description: Runs the POST on the HBA. Support for a remote adapter is TCP/IP access only.

Parameters:

WWPN - World Wide Port Name of the HBA on which you want to run a POST.

SetBeacon

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd SetBeacon <WWPN> <BeaconState>

Description: Sets the current beacon status for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose beacon you want to change.

BeaconState - New state of the beacon: 0 = Off, 1= On

Wakeup

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd Wakeup <WWPN>

Description: Shows wakeup parameter data for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose wakeup parameter data you want to view.

Driver Parameter Commands

Note: Whenever you chose to set a temporary driver parameter, that is "not permanently", the parameter is set on each adapter. This method is slightly different then the way it is done for a permanently changed driver parameter. Because of this, the temporarily changed driver parameter must be viewed as an adapter-specific change. To see this change, use GetDriverParameter rather than GetDriverParameterGlobal. Also, when you run SaveConfig, you must run it with the N option (adapter-specific). This will gather all the values saved on that HBA. This command must be used cautiously.

DriverConfig

Note: When the DriverConfig driver parameter is set persistently and/or requires a reboot, the ramdisk must be rebuilt. To build the ramdisk, type:
esxcfg-boot -b
reboot

Supported by: Windows and VMware ESX Server

Syntax: hbacmd DriverConfig <WWPN> <FileName> <Flag>

Description: Sets all driver parameters for the adapter to the driver parameter values contained in the specified .dpv file type. The .dpv file's driver type must match the driver type of the host platform adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose driver parameters you want to set.

FileName - Name of the .dpv file (the file is stored in the Emulex Repository directory)

Flag - G = Make change global (all HBAs on this host), N = Make change non-global (HBA-specific)

GetDriverParams

Supported by: Windows, Linux and VMware ESX Server. For VMware ESX Server version 3.5.0 or earlier, the driver used the DriverParams command, but it has the same format as GetDriverParams.

Syntax: hbacmd GetDriverParams <WWPN>

Description: Shows the name and values of each driver parameter for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose driver parameters you want to view.

GetDriverParamsGlobal

Supported by: Windows, Linux and VMware ESX Server. For ESX Server version 3.5.0 or earlier, the driver used the DriverParamsGlobal command, but it has the same format as GetDriverParamsGlobal.

Syntax: hbacmd GetDriverParamsGlobal <WWPN>

Description: Shows the name and the global value of each driver parameter for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose driver parameter global names and values you want to view.

SaveConfig

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd SaveConfig <WWPN> <FileName> <Flag>

Description: Saves the specified adapter's driver parameters to a file. The resulting file contains a list of driver parameter definitions in ASCII file format with definitions delimited by a comma. Each definition is of the form: `<parameter-name>=<parameter-value>.`

Saves either the values of the global set or those specific to the HBA. The file created by this command is stored in the Emulex Repository directory.

Parameters:

WWPN - World Wide Port Name of the adapter whose configuration data you want to save.

FileName - Name of the file that contains the driver parameters list.

Flag - G = Save the global parameter set, N = Save the local (HBA-specific) parameter set

SetDriverParam

Note: When the SetDriverParam driver parameter is set persistently and/or requires a reboot, the ramdisk must be rebuilt. To build the ramdisk, type:
esxcfg-boot -b
reboot

Supported by: Windows, Linux and VMware ESX Server

Description: Allows you to change the value of a driver parameter and designate the scope of that change.

Parameters:

WWPN - World Wide Port Name of the adapter whose driver parameters you want to change.

Flag1 - L = Make change local for this adapter only, G = Make change global (all adapters on this host)

Flag2 - P = Make change permanent (persists across reboot), T = Make change temporary

Param - Name of the parameter to modify.

Value - New value you want to assign to the parameter (Input as decimal, prefix with 0x to input as hex).

SetDriverParamDefaults

Note: When the SetDriverParamDefaults driver parameter is set persistently and/or requires a reboot, the ramdisk must be rebuilt. To build the ramdisk, type:
esxcfg-boot -b
reboot

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd SetDriverParamDefaults <WWPN> <Flag1> <Flag2>

Description: Changes all values to the default for the adapter(s).

Parameters:

WWPN - World Wide Port Name of the adapter whose values you want to change to the default.

Flag1 - L = Make changes local for this adapter only, G = Make changes global (all adapters on this host)

Flag2 - P = Make changes permanent (persists across reboot), T = Make changes temporary

Dump Commands

DeleteDumpFiles

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd DeleteDumpFiles <WWPN>

Description: Deletes all diagnostic dump files for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose diagnostic dump files you want to delete.

Dump

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd dump <WWPN>

Description: Displays the maximum number of diagnostic dump files that be can stored for an adapter. Creates a diagnostic dump file in the hbacmd dump file directory.

Parameters:

WWPN - World Wide Port Name of the adapter whose dump information you want to view.

GetDumpDirectory

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd GetDumpDirectory <WWPN>

Description: Displays the dump file directory associated with the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter on which you want to view the dump directory.

GetRetentionCount

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd GetRetentionCount <WWPN>

Description: Displays the maximum number of diagnostic dump files stored for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter on which you want to get the retention count.

SetRetentionCount

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd SetRetentionCount <WWPN> <Value>

Description: Specifies the maximum number of diagnostic dump files stored for the adapter. When the number reaches the retention count limit, the next dump operation causes the oldest diagnostic dump files for that adapter to be deleted.

Parameters:

WWPN - World Wide Port Name of the adapter on which you want to set the retention count.

Value- Value you want to assign to the set retention count.

LUN Masking Commands

GetLunList

Supported by: Windows

Syntax: hbacmd GetLunList <HBA WWPN> <Target WWPN> <Option>

Description: Queries for the presence of any LUNs.

Parameters:

HBA WWPN - World Wide Port Name of the adapter you want to query.

Target WWPN - World Wide Port Name of the target you want to query.

Option - 0 = Get information from driver, 1 = Get information from configuration

GetLunUnMaskbyHBA

Supported by: Windows

Syntax: hbacmd GetLunUnMaskByHBA <HBA WWPN> <Option>

Description: Queries for the presence of any unmasked LUNs by adapter.

Parameters:

HBA WWPN - World Wide Port Name of the adapter you want to query.

Option - 0 = Get information from driver, 1 = Get information from configuration

GetLunUnMaskbyTarget

Supported by: Windows

Syntax: hbacmd GetLunUnMaskByTarget <HBA WWPN> <Target WWPN> <Option>

Description: Queries for the presence of any unmasked LUNs by target.

Parameters:

HBA WWPN - World Wide Port Name of the adapter you want to query.

Target WWPN - World Wide Port Name of the target you want to query.

Option - 0 = Get information from driver, 1 = Get information from configuration

RescanLuns

Supported by: Windows

Syntax: hbacmd RescanLuns <HBA WWPN> <Target WWPN>

Description: Rescans for the presence of any LUNs.

Parameters:

HBA WWPN - World Wide Port Name of the adapter you want to rescan.

Target WWPN - World Wide Port Name of the target you want to rescan.

SetLunMask

Supported by: Windows

Syntax: hbacmd SetLunMask <HBA WWPN> <Target WWPN> <Option> <Lun> <LunCount> <MaskOp>

Description: Masks the specified LUNs.

Parameters:

HBA WWPN - World Wide Port Name of the adapters.

Target WWPN - World Wide Port Name of the target.

Option - 0 = Send information to the driver, 1 = Send information to configuration (make persistent), 2 = Send information to both

Lun - Starting LUN number.

LunCount - Number of LUNs.

MaskOp - A = Mask LUN, B = Clear unmask target level, C = Clear unmask HBA level, D = Unmask LUN, E = Unmask target level, F = Unmask HBA level

Miscellaneous Commands

<…> = Required, […] = Optional

Download

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd Download <WWPN> <FileName>

Description: Loads the firmware image to the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter to which you want to load firmware.

FileName - File name of the firmware image to load (this can be any file accessible to the CLI client application).

ExportSANInfo

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd exportsaninfo [format]

Note: [format] is optional. Leaving the format parameter blank will store the data in XML format.

Description: For reporting purposes, captures the HBA information in xml or csv format.

Parameters: None

GetVPD

Supported by: Windows, Linux and VMware ESX Server.

Syntax: hbacmd GetVPD <WWPN>

Description: Shows the port's Vital Product Data (VPD)

Parameters:

WWPN - World Wide Port Name of the HBA whose VPD you want to view.

ListHBAs

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd ListHBAs

Description: Shows a list of the manageable Emulex adapters discovered by Fibre Channel (in-band) and by TCP/IP (out-of-band).

Parameters: None

Reset

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd Reset <WWPN>

Description: Resets the adapter. An adapter reset can require several seconds to complete, especially for remote devices. Once the reset command is completed, the system command prompt is displayed.

Parameters:

WWPN - World Wide Port Name of the adapter you want to reset.

TargetMapping

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd TargetMapping <WWPN>

Description: Shows a list of mapped targets and the LUNs for the port.

Parameters:

WWPN - World Wide Port Name of the HBA whose target mapping you want to view.

Version

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd Version

Description: Shows the current version of the HBAnyware CLI Client application.

Parameters: None

Persistent Binding Commands

Note: The PersistentBinding, SetPersistentBinding, RemovePersistentBinding, RemoveAllPersistentBinding, BindingCapabilities, BindingSupport and SetBindingSupport commands are not supported for Linux.

Note: The PersistentBinding, SetPersistentBinding, RemovePersistentBinding, RemoveAllPersistentBinding, BindingCapabilities, BindingSupport and SetBindingSupport commands exist in the Emulex driver for ESX Server 3.5.0, but are not supported.

Note: In order for a binding to take effect immediately (SetPersistentBinding parameter, Scope = I or B), the SCSIBus and SCSITarget must match the SCSI bus and SCSI target to which the FC target is already automapped. If automapping is disabled, the binding will take effect immediately if the FC target is not already persistently bound and the specified SCSIBus and SCSITarget are available to be persistently bound. Also, the BindType must match the currently active bind type. Otherwise, you will be notified that you must reboot the system to cause the persistent binding to become active.

AllNodeInfo

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd AllNodeInfo <WWPN>

Description: Shows target node information for each target accessible by the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose target node information you want to view.

BindingCapabilities

Supported by: Windows

Syntax: hbacmd BindingCapabilities <WWPN>

Description: Shows the binding capabilities present for the adapter. If a binding is configured, it means the binding is maintained across reboots.

Parameters:

WWPN - World Wide Port Name of the adapter whose binding capabilities you want to view.

BindingSupport

Supported by: Windows

Syntax: hbacmd BindingSupport <WWPN> <Source>

Description: Shows the binding support available for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose binding support you want to view.

Source - C = Configuration support, L = Live support

PersistentBinding

Supported by: Windows

Syntax: hbacmd PersistentBinding <WWPN> <Source>

Description: Specifies which set of persistent binding information is requested: the configured or live state of any present binding.

Parameters:

WWPN - World Wide Port Name of the adapter whose persistent binding information you want to specify.

Source - C = Configuration, L = Live

SetPersistentBinding

Supported by: Windows

Syntax: hbacmd SetPersistentBinding <WWPN> <Scope> <BindType> <TargetId> <SCSIBus> <SCSITarget>

Description: Sets a persistent binding between an FC target and a SCSI Bus and target. The binding can be to a target WWPN, target WWNN, or target D_ID.

Parameters:

WWPN - World Wide Port Name of the adapter whose persistent bindings you want to set.

Scope - P = Binding is permanent (survives across reboot), I = Binding is immediate, B = Binding is both permanent and immediate.

BindType - P = Enable binding by WWPN, N = Enable binding by WWNN, D = Enable binding by D_ID

TargetId - Target WWPN if BindType = P, Target WWNN if BindType = N, Target D_ID if BindType = D

SCSIBus - Bus number of SCSI device.

SCSITarget - Target number of SCSI device.

RemoveAllPersistentBinding

Supported by: Windows

Syntax: hbacmd RemoveAllPersistentBinding <WWPN>

Description: Removes all persisting bindings for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose persistent bindings you want to remove.

RemovePersistentBinding

Supported by: Windows

Syntax: hbacmd RemovePersistentBinding <WWPN> <BindType> <ID> <SCSIBus> <SCSITarget>

Description: Removes persistent binding between an FC target and a SCSI Bus and target. The binding to be removed can be to a target WWPN, target WWNN, or target D_ID.

Parameters:

WWPN - World Wide Port Name of the adapter whose persistent bindings you want to remove.

BindType - P = Remove binding by WWPN, N = Remove binding by WWNN, D = Remove binding by D_ID

ID - Target WWPN if BindType = P, Target WWNN if BindType = N, Target D_ID if BindType = D

SCSIBus - Bus number of SCSI device.

SCSITarget - Target number of SCSI device.

SetBindingSupport

Supported by: Windows

Syntax: hbacmd SetBindingSupport <WWPN> <BindFlag>

Description: Enables and sets the binding support(s) for the adapter.

Parameters:

WWPN - World Wide Port Name of the adapter whose binding support you want to set and enable.

BindFlag - *D = Binding by D_ID, P = Binding by WWPN, * N = Binding by WWNN, *A = Binding by Automap, DA = Binding by D_ID and Automap, PA = Binding by WWPN and Automap, NA = Binding by WWNN and Automap

* Not available for the Storport Miniport driver.

TCP/IP Management Host File Commands

ListHBAs

See “Miscellaneous Commands” on page 18.

Addhost

Supported by: Windows and Linux

Syntax: hbacmd addhost host_address

Description: Adds a host to the hosts file. The host_address can be an IP address or a host name.

Parameters:

host_address - Host to add

Removehost

Supported by: Windows and Linux

Syntax: hbacmd removehost host_address

Description: Removes a host from the hosts file. The host_address can be an IP address or a host name.

Parameters:

host_address - Host to remove

VPort Commands

<…> = Required, […] = Optional

CreateVPort

Supported by: Windows and Linux

Syntax: hbacmd CreateVPort <physical WWPN> auto [vname]

or

hbacmd CreateVPort <physical WWPN> <virtual WWPN> <virtual WWNN> [vname]

Description: Creates a virtual port with an automatically generated WWPN or a specified virtual WWPN on the specified physical port. If you specify "auto", the virtual WWPN will be generated automatically. Otherwise, you must specify the virtual WWPN for this parameter. If creation is successful, the WWPN is displayed as part of the output from the command. The optional [vname] parameter can be specified for the virtual port's name.

Parameters:

Physical WWPN - World Wide Port Name of the object adapter.

Virtual WWPN – The virtual World Wide Port Name.

Auto - The virtual WWPN will be automatically generated for the virtual port.

Vname - The virtual port’s name (optional).

or

Physical WWPN - World Wide Port Name of the object adapter.

Virtual WWPN – The virtual World Wide Port Name to create.

Vname - The virtual port’s name (optional).

DeleteVPort

Supported by: Windows and Linux

Syntax: hbacmd deletevport <physical WWPN> <virtual WWPN>

Description: Deletes the virtual port specified by a physical and virtual WWPN.

Parameters:

Physical WWPN - World Wide Port Name of the adapter from which you want to delete a virtual port.

Virtual WWPN - The WWPN for the virtual port.

ListVPorts

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd listvports [physical WWPN]

Description: Lists virtual ports on the specified physical port. Leaving the physical wwpn parameter blank will list all VPorts on all manageable hosts that support VPorts.

Parameters:

Physical WWPN - World Wide Port Name of the adapter on which you want to list virtual ports.

VPortTargets

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd vporttargets <physical WWPN> <virtual WWPN>

Description: Lists targets visible to the specified virtual port.

Parameters:

Physical WWPN - World Wide Port Name of the adapter on the targets are visible.

Virtual WWPN - The WWPN for the virtual port.

WWN Management Commands

Note: WWN Management validates WWNs very carefully to avoid name duplication. Therefore, you may see error and warning messages if a name duplication is detected. It is strongly recommended that the activation requirement be fulfilled after each WWN change or restore. When running with "pending changes", some diagnostic and maintenance features are not allowed.

ChangeWWN

Supported by: Windows, Linux and VMware ESX Server

Syntax: ChangeWWN <WWPN> <New WWPN> <New WWNN> <Type>

Description; Changes the volatile or non-volatile state of WWNs. If the volatile change is requested on an adapter that does not support Volatile WWNs, an appropriate "not supported" error is displayed.

Note: When a volatile change is supported, a reboot is required to activate the new setting. Volatile names will be active until system power-down or adapter power-cycle.

Note: For VMware ESX Server: After changing the WWN of an adapter, be sure your zoning settings are updated before you reboot your ESX server. If the zoning is not updated before your reboot, this could lead to long boot times.

Parameters:

WWPN - World Wide Port Name of Object adapter.

New WWPN - New World Wide Port Name of Object adapter.

New WWNN - New World Wide Node Name of Object adapter.

Type - 0: Volatile,1: Non-Volatile

Get Capabilities (GetWWNCap on VMware)

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd getwwncap <WWPN>

Description: Shows if volatile change is supported for the WWPN.

Note: A reboot is required to activate the new setting.

Parameters:

WWPN - World Wide Port Name of Object adapter.

ReadWWN

Supported by: Windows, Linux and VMware ESX Server

Syntax: hbacmd readWWN <WWPN> <Type>

Description: Reads different types of WWNs.

Parameters:

WWPN - World Wide Port Name of Object adapter.

Type - 0: Volatile, 1: Non-Volatile, 2: Factory Default, 3: Current, 4: Configured

RestoreWWN

Supported by: Windows, Linux and VMware ESX Server

Syntax: RestoreWWN <WWPN> <Type>

Description: Quickly changes the WWNs back to the factory default or non-volatile values. This change is non-volatile.

Note: A reboot is required to activate the new setting.

Parameters:

WWPN - World Wide Port Name of Object adapter.

Type: 0: Restore Default WWNs, 1: Restore NVRAM WWNs

ASCII Strings that May Be Returned

"Invalid Handle"
"Invalid Argument"
"Illegal WWN"
"Illegal Index"
"More Data"
"Bad Local Bus Number"
"Bad Local Target Number"
"Bad Local LUN"
"Local SCSI ID Already Bound"
"No Such Binding"
"Target Not Found"
"Internal Call Failed”
"Insufficient Buff"
"Install Dir Not Found"
"Path Length"
"Partial data returned"
"Buffer Overflow"
"Response Timeout"
"Link Unavailable"
"Insufficient Resources"
"Existing Registration"
"Invalid Tag"
"Invalid WWN"
"Create Event Failed"
"Node Bind Reboot"
"Node Bind Immediate Failed"
"Set PBind Failed"
"Bound to Diff SCSI ID"
"Resource Allocation"
"Wrong Bind Type"
"SCSI ID Already Bound"
"RSC Type"
"Authenticate Failed"
"Opening Resource"
"Reading Resource"
"Invalid FW Image Base"
"Short FW Image"
"Long FW Image"
"Bad Checksum"
"Incompatible Image"
"Buffer Allocation"
"No Local HBA"
"Insufficient Buffer Size"
"Not an Emulex Port"
"Download In Progress"
"Bad Data"
"SCSI Check Condition"
"Null Buffer"
"Get Driver Type"
"Unauthorized SAID"
"During Authentication"
"Authentication Keys"
"Failed Msg Authenticate"
"Failed Client Authenticate"
"Security Not Active"
"Writing File"

"File Not Found"
"Reading File"
"Encryption"
"Decryption"
"Creating File"
"Header Data"
"Revision Data"
"File Exists"
"Bad Size for Rsp Buf"
"Access Control Data"
"Acquiring Auth. Sem."
"Invalid SAID Client"
"Invalid SAID Server"
"Security Not Installed"
"Driver Params: IOCTL Get"
"Driver Params: IOCTL Set"
"Driver Params: Registry Get"
"Driver Params: Registry Set"
"Driver Params: Conf File Open"
“Driver Params: Conf File Write"
"Driver Params: Internal"
"Driver Params: Not Dynamic"
"Driver Params: Range"
"Driver Params: Bad Param Name"
"Boot BIOS Not Present"
"Read Wakeup Parms"
"Update Wakeup Parms"
"Disable Boot BIOS"
“Authentication Driver parameter not enabled. Please go to driver parameter menu and enable this variable.";
request rejected."
"Host not found or unreachable"
"Mailbox Busy Retry"
"Mailbox Timed Out"
"Mailbox failed; Internal Driver Error"
"Adapter Busy"

Appendix A - Driver Parameters for Windows

The parameter values listed in Table 2 are applicable to Storport Miniport driver versions 2.00 or later. If you are using a version previous to 2.00, see the Storport Miniport Driver User Manual for that version's parameter information.

Activation Requirements

A parameter has one of the following activation requirements:

- Dynamic - The change takes effect while the system is running.
- Reset - Requires an adapter reset from the utility before the change takes effect.
- Reboot - Requires reboot of the entire machine before the change takes effect. In this case, you are prompted to perform a reboot when you exit the utility.

The Driver Parameter table provides information such as the allowable range of values and factory defaults. Parameters can be entered in decimal or hexadecimal format.

Note: If you are creating custom unattended installation scripts, any driver parameter can be modified and included in the script.

Most parameters default to a setting that optimizes adapter performance.

Table 2: Storport Miniport Driver Parameters

Parameter	Definitions	Activation Requirement
AutoMap=**n**	AutoMap controls the way targets are assigned SCSI IDs. Discovered targets are assigned persistent SCSI IDs according to the selected binding method. Persistent bindings do not take effect with the driver in stand-alone mode. If set to 0 = automap is disabled. Uses the HBAnyware utility to persistently set the SCSI address of a discovered FCP capable FC node (target). If set to 1 = automap by WWNN. If set to 2 = automap by WWPN. If set to 3 = automap by DID Value: 0 - 3 Default = 2	Reboot
Class=**n**	Class selects the class of service on FCP commands. If set to 2, class = 2. If set to 3, class = 3. Value: 2 - 3 Default = 3	Dynamic

Table 2: Storport Miniport Driver Parameters (Continued)

Parameter	Definitions	Activation Requirement
CoalesceMsCnt=**n**	CoalesceMsCn specifies wait time in milliseconds to generate an interrupt response if CoalesceRspCnt has not been satisfied. Zero specifies an immediate interrupt response notification. A non-zero value enables response coalescing at the specified interval in milliseconds. Value: 0 - 63 (decimal) or 0x0 - 0x3F (hex) Default = 0 (0x0)	Reset
CoalesceRspCnt=**n**	CoalesceRspCn specifies the number of response entries that trigger an Interrupt response. Value: 0 - 255 (decimal) or 0x1 - 0xFF (hex) Default = 8 (0x8)	Reset
DiscoveryDelay=**n**	DiscoveryDelay controls whether the driver waits for ‘n’ seconds to start port discovery after link up. If set to 0 = immediate discovery after link up. If set to 1 or 2 = the number of seconds to wait after link-up before starting port discovery. Value: 0 - 2 seconds (decimal) Default = 0.	Dynamic
EnableAck0=**n**	Set to 1 to force sequence rather than frame level acknowledgement for class 2 traffic over an exchange. This applies to FCP data exchanges on IREAD and IWRITE commands. Value: 0 - 1 (decimal) Default = 0	Reset
EnableAUTH	EnableAUTH enables fabric authentication. This feature requires the authentication to be supported by the fabric. Authentication is enabled when this value is set to 1. Value: 0 - 1 Default = 0	Reboot
EnableFDMI=**n**	If set to 1, enables management server login on fabric discovery. This allows Fabric-Device Management Interface (FDMI) to operate on switches that have FDMI-capable firmware. If set to 2, FDMI operates and uses the host name feature of FDMI. Value: 0 -2 (decimal) Default = 0	Reset

Table 2: Storport Miniport Driver Parameters (Continued)

Parameter	Definitions	Activation Requirement
EnableNPIV=**n**	If set to 1, enables N_Port_ID virtualization (NPIV). Requires NPIV supported firmware for the adapter. Value: 0 -1 Default = 0 (disabled) **Note:** To run the driver using NPIV or SLI-3 optimization, the firmware must be version 2.72a0 or later. If an earlier version is used, the driver runs in SLI-2 mode and does not support NPIV. **Note:** NPIV is not available on 1Gb/s and 2 Gb/s HBAs.	Reset
FrameSizeMSB=**n**	FrameSizeMSB controls the upper byte of receive FrameSize if issued in PLOGI. This allows the FrameSize to be constrained on 256-byte increments from 256 (1) to 2048 (8). Value: 0 - 8 Default = 0	Reset
HardALPA=0x**n**	HardALPA allows the adapter to use a hard assigned loop address. Value: 0x00 - 0xEF (hex) Default = 0x00 (use soft addressing, or flash stored hard address value) **Note:** Only valid AL_PAs can be used.	Reset
InitTimeout=**n**	Determines the number of time-out seconds during driver initialization for the link to come up. If the link fails to come up by InitTimeout, driver initialization exits but is still successful. If the link comes up before InitTimeout, the driver sets double the amount for discovery to complete. Value: 5 -30 seconds or 0x5 - 0x1E (hex) Default = 15 seconds (0xF)	Reboot
LinkSpeed**=n**	LinkSpeed has significance only if the adapter supports speeds other than one Gb/s. Value: Auto-select, 1 Gb/s, 2 Gb/s, 4 Gb/s, 8 Gb/s Default = Auto-select **Note:** Setting this option incorrectly can cause the HBA to fail to initialize.	Reset

Table 2: Storport Miniport Driver Parameters (Continued)

Parameter	Definitions	Activation Requirement
LinkTimeOut=**n**	LinkTimeOut applies to a private loop only. A timer is started on all mapped targets using the link timeout value. If the timer expires before discovery is re-resolved, commands issued to timed out devices returns a SELECTIION_TIMEOUT. The Storport driver is notified of a Bus change event which leads to the removal of all LUNs on the timed out devices. Value: 1 - 500 seconds or 0x0 - 0xFE (hex) Default = 30 (0x1E)	Dynamic
LogErrors=**n**	LogErrors determine the minimum severity level required to enable entry of a logged error into the system event log. Errors are classified as severe, malfunction or command level. A severe error requires user intervention to correct a firmware or adapter problem. An invalid link speed selection is an example of a severe error. A malfunction error indicates that the system has problems, but user intervention is not required. An invalid fabric command type is an example of a malfunction error. A command level error: an object allocation failure is an example of a command error. If set to 0, all errors are logged. If set to 1, command level errors are logged. If set to 2, malfunction errors are logged. If set to 3, severe errors are logged. Value: 0 - 3 Default = 3	Dynamic
NodeTimeout=**n**	The node timer starts when a node (i.e. discovered target or initiator) becomes unavailable. If the node fails to become available before the NodeTimeout interval expires, the OS is notified so that any associated devices (if the node is a target) can be removed. If the node becomes available before NodeTimeout expires the timer is canceled and no notification is made. Value: 1 - 255 seconds or 0x0 - 0xFF (hex) Default = 30 (0x1E)	Dynamic
QueueDepth=**n**	QueueDepth requests per LUN/target (see QueueTarget parameter). If you expect the number of outstanding I/Os per device to exceed 32, then you must increase to a value greater than the number of expected I/Os per device (up to a value of 254). If the QueueDepth value is set too low, a performance degradation can occur due to driver throttling of its device queue. Value: 1 - 254 or 0x1 - 0xFE (hex) Default = 32 (0x20)	Dynamic

Table 2: Storport Miniport Driver Parameters (Continued)

Parameter	Definitions	Activation Requirement
QueueTarget=**n**	QueueTarget controls I/O depth limiting on a per target or per LUN basis. If set to 0 = depth limitation is applied to individual LUNs. If set to 1 = depth limitation is applied across the entire target. Value: 0 -1 or 0x0 - 0x1 (hex) Default = 0 (0x0)	Dynamic
RmaDepth=**n**	RmaDepth sets the remote management buffer queue depth. The greater the depth, the more concurrent management controls can be handled by the local node. Value: 8 - 64, or 0x8 - 0x40 (hex) Default = 16 (0x10) **Note:** The RmaDepth driver parameter pertains to the functionality of the HBAnyware utility.	Reboot
ScanDown=**n**	If set to 0 = lowest AL_PA = lowest physical disk (ascending AL_PA order). If set to 1 = highest AL_PA = lowest physical disk (ascending SEL_ID order). Value: 0 - 1 Default = 0 **Note:** This option applies to private loop only in DID mode.	Reboot
SLIMode=**n**	If set to 0 = autoselect firmware, use the newest firmware installed. If set to 2 = implies running the HBA firmware in SLI-2 mode. If set to 3 = implies running the HBA firmware in SLI-3 mode. Value: 0, 2 and 3 Default = 0	Reboot
Topology=**n**	Topology values can be 0 to 3. If set to 0 (0x0) = FC Arbitrated Loop (FC-AL). If set to 1 (0x1) = PT-PT fabric. If set to 2 (0x2) = *FC-AL first, then attempt PT-PT. If set to 3 (0x3) = *PT-PT fabric first, then attempt FC-AL. * Topology fail-over requires v3.20 firmware or higher. If firmware does not support topology fail-over, options 0,2 and 1,3 are analogous. Value: 0 - 3 Default = 2 (0x2)	Reset

Table 2: Storport Miniport Driver Parameters (Continued)

Parameter	Definitions	Activation Requirement
TraceBufSiz=**n**	TraceBufSiz sets the size in bytes for the internal driver trace buffer. The internal driver trace buffer acts as an internal log of the driver's activity. Value: 250,000 - 2,000,000 or 0x3D090 - 0x1E8480 (hex). Default = 250,000 (0x3D090)	Reboot

Appendix B - Driver Parameters for Linux

The information contained in the following table is useful when entering commands related to driver parameters.

Table 3: Open Source Linux Driver Parameters

Variable	Default	Min	Max	Comments
ack0	0	0=Off	1=On	Valid for all drivers. Uses ACK0 for class 2.
cr_count	1	1	255	Determines the values for I/O coalescing for cr_delay (msec) or cr_count outstanding commands.
cr_delay	0	0	63	Determines the values for I/O coalescing for cr_delay (msec) or cr_count outstanding commands.
enable_auth	0	0	1	This driver property specifies if DHCHAP is enabled or not. When set to 1, DHCHAP is enabled. When set to 0, DHCHAP support is disabled. **NOTE:** This property requires a link reset to activate.
enable_npiv	0	0	1	This parameter controls the driver's ability to use NPIV to create virtual ports. It defaults to off (0) which prevents the driver from creating any virtual ports. When enabled (set to 1) it enables you to create and delete virtual ports (if supported by the fabric).
fcp_class	3	2	3	The Fibre Channel class for FCP data transmission.
fdmi_on	0	0=False if disabled. 1=True if enabled 2=True if enabled		Enables or disables Fabric-Device Management Interface (FDMI) functionality. False (0) if disabled. (1) or (2) if enabled, depending on type of support needed.
link_speed	0	0=auto select 1=1 Gb/s 2=2 Gb/s 4=4 Gb/s		Sets link speed.

Table 3: Open Source Linux Driver Parameters

Variable	Default	Min	Max	Comments
log_verbose	0x0	0x0	0xffff	This bit mask controls extra activity logging. No driver reload is required.
lun_queue_depth	30	1	128	The default maximum commands sent to a single logical unit (disk).
max_luns	256	1	32768	Specifies the maximum number of LUNs per target. A value of 20 means that 19 LUNs (0 - 19) are valid.
nodev_tmo	30	1	255	Seconds to hold I/O error if the device disappears. If this value is changed, no driver reload is required.
scan_down	1	0=Off	1=On	Selects method for scanning ALPA to assign a SCSI ID.
topology	0	0x0=loop then P2P 0x2=P2P only 0x4=loop only 0x6=P2P then loop		Fibre Channel link topology (defaults to loop, if it fails attempts point-to-point mode).
use_adisc	0	0=Off	1=On	Send ADISC instead of PLOGI for device discovery or RSCN. If this value is changed, no driver reload is required.

Appendix C - Driver Parameters for VMware

All HBA-specific parameters have an lpfcX_ prefix (where X is the driver instance number); e.g., setting lpfc0_lun_queue_depth= 20 makes 20 the default number of maximum commands which can be sent to a single logical unit (disk) for lpfc instance 0.

Note: NPIV is not available on 1 Gb/s and 2 Gb/s HBAs.

Dynamic parameters do not require the driver to be unloaded and reloaded for changes to take effect.

Table 4: Driver for VMware ESX Configuration Parameters

Variable	Default	Min	Max	Dynamic	Comments
lpfc_hba_queue_depth	65535	0	65535	Yes	Maximum number of FCP commands that can queue to an Emulex adapter.
lpfc_initiator_login	0	0	1	Yes	Enables logins to other virtual initiators.
lpfc_ack0	0	0=Off	1=On	No	Use ACK0 for class 2.
lpfc_automap	1	0=Off	1=On	No	Automatically assign SCSI IDs to FCP targets detected.
lpfc_check_cond_err	0	0=Off	1=On	Yes	Treat certain FCP check conditions as FCP RSP errors.
lpfc_cr_count	1	1	255	No	This parameter determines the values for I/O coalescing for cr_delay (msec) or cr_count outstanding commands.
lpfc_cr_delay	0	0	63	No	This parameter determines the values for I/O coalescing for cr_delay (msec) or cr_count outstanding commands.
lpfc_delay_rsp_err	0	0=Off	1=On	Yes	Treat FCP RSP errors like no-device-delay.
lpfc_discovery_threads	1	1	64	No	Specifies the maximum number of ELS commands that can be outstanding for a discovery.
lpfc_dqfull_throttle_up_inc	1	0	128	Yes	Amount to increment LUN queue depth each time.
lpfc_dqfull_throttle_up_time	1	0	30	Yes	Time interval, in seconds, to increment LUN queue depth.
lpfc_extra_io_tmo	0	0	255	Yes	Extra FCP cmd timeout when connected to a fabric (in seconds).

Table 4: Driver for VMware ESX Configuration Parameters (Continued)

Variable	Default	Min	Max	Dynamic	Comments
lpfc_fcp_bind_DID	inactive	N/A	N/A	No	Bind specific SCSI IDs to targets based on FC Port ID.
lpfc_fcp_bind_method	2	1	4	No	Specifies the bind method (WWWN/WWPN/DID/ALPA map) to be used.
lpfc_fcp_bind_WWNN	inactive	N/A	N/A	No	Bind specific SCSI IDs to targets based on FC WWNN.
lpfc_fcp_bind_WWPN	inactive	N/A	N/A	No	Bind specific SCSI IDs to targets based on FC WWPN.
lpfc_fcp_class	3	2	3	Yes	FC class for FCP data transmission.
lpfc_fdmi_on	0	0	2	No	False (0) if disabled. (1) or (2) if enabled depending on type of support needed.
lpfc_iocb_wdog_tmo	40	0	55	No	Timeout value for pending FC I/O in the driver.
lpfc_linkdown_tmo	30	0	255	Yes	(seconds) How long the driver waits before deciding that the FC link is down.
lpfc_link_speed	0	0=auto select 1=1 Gb/s 2=2 Gb/s 4=4 Gb/s 8=8 Gb/s		No	Sets link speed.
lpfc_log_verbose	0x0	0x0	0xffff	Yes	(bit mask) Extra activity logging.
lpfc_pci_max_read	0	0	4096	No	The maximum number of bytes transferred per pci DMA read. The default value 0 means the driver will automatically determine the correct value.
lpfc_lun_queue_depth	30	1	128	Yes	Default max commands sent to a single logical unit (disk).
lpfc_lun_skip	0	0=Off	1=On	No	Allows SCSI layers to detect all LUNs if there are LUN holes on a device.
lpfc_max_lun	256	1	256	Yes	Specifies the maximum number of LUNs per target. A value of 20 means LUNs from 0 to 19 are valid.
lpfc_max_target	256	1	256	No	This configuration parameter limits how many targets the driver can support.

Table 4: Driver for VMware ESX Configuration Parameters (Continued)

Variable	Default	Min	Max	Dynamic	Comments
lpfc_max_vpi	0xffff	0	0xffff	No	NPIV: Maximum number of vpis available per physical port.
lpfc_nodev_holdio	0	0=Off	1=On	Yes	If the device disappears, hold I/O until it comes back.
lpfc_no_device_delay	1	0	30	Yes	Delay to fail back an I/O in seconds.
lpfc_nodev_tmo	30	0	255	Yes	Seconds to hold I/O err if device disappears.
lpfc_ns_threads	2	1	32	Yes	NPIV: Number of concurrent NameServer requests allowed to be outstanding.
lpfc_peer_vport_login	0	0	1	Yes	NPIV: Allows peer Vports to log into each other.
lpfc_scan_down	1	0=Off	1=On	Yes	Select method for scanning ALPA to assign a SCSI ID.
lpfc_scsi_req_tmo	30	0	255	Yes	Time out value (in seconds) for SCSI passthrough requests.
lpfc_tgt_queue_depth	0	0	8192	Yes	Default max commands sent to a single target.
lpfc_topology	0	0x0=loop then P2P 0x2=P2P only 0x4=loop only 0x6=P2P then loop		No	FC link topology (defaults to loop, if it fails attempts point-to-point mode).
lpfc_use_adisc	0	0=Off	1-On	Yes	Send ADISC instead of PLOGI for device discovery or RSCN.
lpfc_xmt_que_size	256	128	8192	No	Number of outstandng commands for an adapter.